ABSTRACT

A method and system for communicating a packet over a cell relay satellite network, without establishing a connection in the cell relay satellite network. comprises the steps of segmenting the packet into a number of segments at a source node in the communications network, generating for each of the segments a fixed size cell that includes a cell header and a payload with a prefix, a downlink beam locator, and a source node identifier included in the cell header, and inserting each segment into the payload of each generated cell, respectively, and transmitting the cells to the cell relay satellite. A cell relay satellite receives each transmitted cell from the source node, and broadcasts each cell on a downlink beam corresponding to the downlink beam locator in each cell header. A destination node receives each broadcasted cell on the downlink beam, and re-assembles the packet from the received cells. Specifically, the destination node re-assembles the packet by identifying the cells corresponding to the packet, and appending the segments inside the cell payloads together, in the order of receipt of the identified cells. Finally, the destination node may identify a destination address in the packet, and may route the packet to the identified destination address, which may reside in another communications network.